

ABSTRACT

In a method of bonding objects to be bonded together in a solid phase at low temperature after subjecting bonding surfaces of the objects to be bonded to a hydrophilic treatment using a plasma, the objects to be bonded are conventionally handled in the atmospheric air for bonding, so that adhesion of organic substances in the atmospheric air leads to a reduction in bonding strength. Therefore, diffusion bonding needs to be performed at a temperature of as high as 1100°C in the conventional art. According to the present invention, firm bond can be achieved at low temperature. In a method for bonding objects to be bonded together in a solid phase after subjecting bonding surfaces of the objects to be bonded to a hydrophilic treatment using a plasma, a chemical treatment step of subjecting both the objects to be bonded to the hydrophilic treatment using the plasma without exposure to the atmospheric air is performed after a physical treatment step of subjecting both the objects to be bonded to a physical treatment using an energy wave, such as an atom beam, an ion beam or a plasma, thereby bonding both the objects to be bonded together. Therefore, satisfactory bonding can be achieved without adhesion of organic substances or the like, thereby making it possible to achieve firm bond at a low temperature of 500°C or less.